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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,593	05/25/2000	Hideki Fujino	1086.1116/JDH	7150

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
SHARON, AYAL I	

ART UNIT	PAPER NUMBER
2123	6

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PRE

Office Action Summary	Application No.	Applicant(s)	
	09/577,593	FUJINO, HIDEKI	
	Examiner	Art Unit	
	Ayal I Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *20 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-15 and 18-23* is/are rejected.

7)☒ Claim(s) *5-6 and 16-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. Claims 1-23 of U.S. Application 09/577,593, originally filed on 5/25/2000, and amended in paper #5 on 10/20/2003, are presented for examination. Claims 1-2, 10, 12-15, and 19-22 were amended in paper #5. Claim 23 was added in paper #5. The application claims priority to Japanese Application 11/320,662 filed on 11/11/1999.

Claim Objections

2. Claims 5-6 and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and all intervening claims.
3. The reason Claims 5 and 16 would be allowable, if rewritten in independent form including all of the limitations of the base claim and all intervening claims, is as follows:

> 5. (ORIGINAL) A system according to claim 4, wherein
>
> in case said optical component lying on said optical path is a movable reflecting mirror that is capable of swinging around a predetermined rotational axis, said optical axis auto-creation unit is able to designate as control parameters the position of said rotational axis and the angle of a reflection surface within a three-dimensional space, said optical axis auto-creation unit automatically creating and arranging reflected optical axis models from input optical axis models on the basis of said control parameters.

16. (ORIGINAL) A method according to claim 15, wherein

in case said optical component lying on said optical path is a movable reflecting mirror that is capable of swinging around a predetermined rotational axis, it is possible to designate as control parameters the position of said rotational axis and the angle of a reflection surface within a three-dimensional space so that reflected optical axis models are automatically created, for arrangement, from input optical axis models on the basis of said control parameters.

Dickson teaches (col.60, line 65 – col.62, line 10) the calculation of the incidence angle in a design process model. The variables in Expression No.3 in Fig.18C (See Dickson, col.61, lines 10-12) constitute "control parameters".

Dickson also teaches that during the assembly of the of the components designed in the model (see Dickson, col.70, lines 29-62), that "... the laser beam emanating from the second surface of the prism is automatically oriented along an axis which ultimately passes through the scanner disc in the plane formed between the (i) line extending from the outer scanning disc to Beam-Incident-Point point r_0 and (ii) the scanning disc axis of rotation itself."

However, Dickson teaches (see Dickson, col.70, lines 29-62) that "... the pivot plate is ... mounted within the recess of the optical bench of the laser beam production module and then the pivot plate is rotated relative to module bench until the beam is perpendicular to the mirror, as indicated at Block N of Fig.21C2." In other words, Dickson teaches that the mirror is stationary and the laser beam production module rotates.

On the other hand, in Applicant's Claims 5 and 16, it is the mirror that rotates ("... a movable reflecting mirror that is capable of swinging around a predetermined rotational axis"), and the light source is stationary.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The prior art used for these rejections is as follows:

6. Dickson et al., U.S. Patent 5,984,185. (Henceforth referred to as "**Dickson**").

7. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

8. **Claims 1-4, 7-15, and 18-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Dickson.**

9. In regards to Claim 1, Dickson teaches the following limitations:

1. (CURRENTLY AMENDED) An optical path simulation CAD system comprising:

an optical model creation unit creating and allowing a display of a three-dimensional optical model in which one or more optical components are disposed on an optical path extending from a light source to a final arrival position; and

(Dickson, especially: Fig.7, Fig.11A-Fig.11C; col.33-col.40;)

an optical axis auto-creation unit figuring out, based on predetermined set parameters, a cylindrical optical axis model having a predetermined optical axis diameter and length indicative of behaviors of beams of light in said three-dimensional optical model, said optical axis auto-creation unit arranging and displaying said optical axis model in said three-dimensional optical model, for verification.

(Dickson, especially: Fig.11A-Fig.11C and Fig.20; Fig 31B, block C; col.43, lines 62-67; col.63, line 7-col.64, line 5; col.78, line 56 – col.79, line 7)

10. In regards to Claim 2, Dickson teaches the following limitations:

2. (CURRENTLY AMENDED) A system according to claim 1, wherein

said optical axis auto-creation unit defines for said optical axis mode, the optical axis diameter and the color of a beam of light emitted from said light source, said optical axis auto--creation unit creating and arranging as said optical axis model, a cylindrical shape having a length starting from said light source and ending in an input surface of a next adjacent optical component lying on said optical path.

(Dickson, especially: Fig.2E; col.26, lines 17-26; col.37, line 60 – col.39, line 42; col.78, line 56 – col.79, line 7)

11. In regards to Claim 3, Dickson teaches the following limitations:

3. (ORIGINAL) A system according to claim 2, wherein

said optical axis auto-creation unit varies, the optical axis diameter of said optical axis model as a function of the distance from the starting point.

(Dickson, especially: Fig.6B-6C; Fig.20; Fig.25; col.9, lines 8-16; col.14, lines 23-27; col.15, lines 32-42)

12. In regards to Claim 4, Dickson teaches the following limitations:

4. (ORIGINAL) A system according to claim 1, wherein

for said optical component(s) interposed between said light source and a final arrival position, said optical axis auto-creation unit creates output-side optical axis model(s) in conformity with optical functions of said optical component(s) from input optical axis model(s), to arrange said output-side optical axis model between said optical component and a next adjacent optical component or said final arrival position.

(Dickson, especially: Fig.2E; col.26, lines 1-57;)

13. In regards to Claim 7, Dickson teaches the following limitations:

7. (ORIGINAL) A system according to claim 1, wherein

in case said optical component lying on said optical path is a lens, said optical axis auto-creation unit previously defines optical functions of said lens and automatically creates an output-side optical axis model in conformity with said optical functions from an input optical axis model, to arrange said output-side optical axis model between said optical component and a next adjacent optical component or an image forming face.

(Dickson, especially: Fig.20A, Fig.20B1-Fig.20B3; col.63, line 9 – col.66, line 42)

14. In regards to Claim 8, Dickson teaches the following limitations:

8. (ORIGINAL) A system according to claim 1, wherein

said optical axis auto-creation unit provides a display of an optical axis ending point at a position where an optical axis model intersects said final arrival face, said optical axis auto-creation unit recording coordinates of said ending point into a file.

(Dickson, especially: col.36, line 18 – col.39, line 47)

15. In regards to Claim 9, Dickson teaches the following limitations:

9. (ORIGINAL) A system according to claim 1, wherein

said optical axis auto-creation unit defines a boundary wall model indicative of an optical axis extension limit around said three-dimensional optical model, said optical axis auto-creation unit if said optical path has no final arrival position providing an ending point, setting the position of said boundary wall model which said optical axis model intersects as an ending point of an extended optical axis model.

(Dickson, especially: col.36, line 18 – col.39, line 47)

16. In regards to Claim 10, Dickson teaches the following limitations:

10. (CURRENTLY AMENDED) A system according to claim 1, wherein

said optical axis auto-creation unit previously defines time-sequential variations of control parameters of said optical components lying on said optical path extending from said light source to an image forming face, said optical axis auto-creation unit allowing said three-dimensional model to perform continuous actions in accordance with said time-sequential variations of said control parameters, to thereby display a desired ending point trace in the shape of a letter or a symbol on a final arrival face and to record coordinates of said ending point into a file.

(Dickson, especially: col.35, line 62 to col.36, line 52; col.54, line 57 to col.55, line 12)

17. In regards to Claim 11, Dickson teaches the following limitations:

11. (ORIGINAL) A system according to claim 10, wherein

said optical axis auto-creation unit converts coordinate values of said ending point coordinates recorded in said file, into dot data, for the output from a printer.

(Dickson, especially: col.35, line 62 to col.36, line 52;)

The functionality of printing computer data files is old and well known, in particular in the products specifically mentioned in the cited portion of the reference (Autocad, MathCad, Microsoft Excel, Lotus Spreadsheet).

18. Claims 12-15 and 18-22 are rejected based on the same reasoning as Claims 1-4 and 7-11. Claims 12-15 and 18-22 are method claims reciting the equivalent limitations as are recited in system claims 1-4 and 7-11 and taught throughout Dickson.

19. In regards to Claim 23, Dickson teaches the following limitations:

23. (NEW) An optical path simulation method comprising:

creating a three-dimensional optical model in which at least one optical component is disposed on an optical path between a light source and a destination position; and
(Dickson, especially: Fig.7; col.33-col.40;)

calculating a cylindrical optical axis model having a predetermined optical axis parameter and length indicative of behaviors of beams of light in the three-dimensional optical model; and
(Dickson, especially: Fig.7; col.33-col.40;)

displaying the optical axis model in the three-dimensional optical model, for verification.
(Dickson, especially: Fig.7; col.33-col.40;)

Response to Arguments

20. Examiner objected to claim 22 because it originally stated that it depended from claim 12 and not claim 21, in what appeared to be a typographical error. Applicant has amended the claim so it now states that it depends from claim 21. Examiner has therefore withdrawn the objection.

21. Examiner has applied new art rejections in response to Applicant's amendments.

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (703) 306-0297. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on (703) 305-9704. Any response to this office action should be mailed to:

Director of Patents and Trademarks
Washington, DC 20231

Hand-delivered responses should be brought to the following office:

4th floor receptionist's office
Crystal Park 2
2121 Crystal Drive
Arlington, VA

The fax phone numbers for the organization where this application or proceeding is assigned are:

All communications: (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is: (703) 305-3900.

Ayal I. Sharon

Art Unit 2123

January 9, 2004

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER